

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of claims:

In the Claims:

<sup>21</sup>  
1-42 Cancelled

<sup>22</sup> 43. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said functional group forms said thermo-reversible cross-linked structure which is covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature, and said covalent bond is at least one of a Diels-Alder type and carboxyl-alkenyloxy type.

<sup>23</sup> 44. (New) The biodegradable resin according to Claim 43, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, alkenyl group, alkenyloxy group, and group having a conjugated double bond.

<sup>24</sup> 45. (New) The biodegradable resin according to Claim 43, wherein said biodegradable resin includes polyesters having at least one functional group selected

from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyesters.

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46. (New). The biodegradable resin according to Claim 43, wherein said biodegradable resin includes polyols having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyols.

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47. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin includes polyamino acids having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyamino acids.

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48. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin includes polysaccharides having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polysaccharides.

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49. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and

cleaved by heating, wherein said biodegradable resin is polylactic acid or modified body of the polylactic acid.

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50. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin is polybutylene succinate or modified body of the polybutylene succinate.

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51. (New) The biodegradable resin according to Claim 43, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to

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52. (New) The biodegradable resin according to Claim 43, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

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53. (New) The biodegradable resin according to Claim 43, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

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54. (New) The biodegradable resin according to Claim 43, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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55. (New) The biodegradable resin according to Claim 47, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

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56. (New). The biodegradable resin according to Claim 47, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

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57. (New) The biodegradable resin according to Claim 47, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

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58. (New) The biodegradable resin according to Claim 47, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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59. (New) The biodegradable resin according to Claim 48, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

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60. (New) The biodegradable resin according to Claim 48, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

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61. (New) The biodegradable resin according to Claim 48, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

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62. (New) The biodegradable resin according to Claim 48, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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63. (New). The biodegradable resin according to Claim 49, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.000 1 to 1.

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64. (New) The biodegradable resin according to Claim 49, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

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65. (New) The biodegradable resin according to Claim 49, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

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66. (New) The biodegradable resin according to Claim 49, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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67. (New) The biodegradable resin according to Claim 58, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

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68. (New) The biodegradable resin according to Claim 50, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

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69. (New) The biodegradable resin according to Claim 50, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

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70. (New) The biodegradable resin according to Claim 50, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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71. (New) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

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72. (New) The biodegradable resin according to Claim 71, wherein said covalent bond is of at least one mode selected from the group consisting of Diels-Alder

type, nitroso dimer type, acid anhydride ester type, halogen-amine type, urethane type, azlactone-hydroxyaryl type and carboxyl-alkenyloxy type.

52 73. (New) The biodegradable resin according to Claim 71, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, amino group, hydroxyaryl group, alkenyl group, alkenyloxy group, nitroso group, halogen, group having a conjugated double bond, group having an acid anhydride structure, group having an isocyanate structure, and group having an azlactone structure.

53 74. (New). The biodegradable resin according to Claim 7, wherein said functional group forms said thermo-reversible cross-linked structure which is covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature.

24 75. (New) The biodegradable resin according to Claim 74, wherein said covalent bond is at least one of a Diels-Alder type and carboxyl-alkenyloxy type.

55 76. (New) The biodegradable resin according to Claim 74, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, alkenyl group, alkenyloxy group, and group having a conjugated double bond.

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77. (New) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

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78. (New) The biodegradable resin composition according to Claim 77, wherein said first functional group and said second functional group are identical.

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79. (New) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 47.

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80. (New) The biodegradable resin composition according to Claim 79, wherein said first functional group and said second functional group are identical.



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81. (New) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

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82. (New) The biodegradable resin composition according to Claim 81, wherein said first functional group and said second functional group are identical.

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83. (New). A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

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84. (New) The biodegradable resin composition according to Claim 83, wherein said first functional group and said second functional group are identical.

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85. (New) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

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86. (New) The biodegradable resin composition according to Claim 85, wherein said first functional group and said second functional group are identical.

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87. (New) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.

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88. (New) The biodegradable resin composition according to Claim 87, wherein said first functional group and said second functional group are identical.

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89. (New) A biodegradable resin composition comprising

a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

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90. (New) The biodegradable resin composition according to Claim 89, wherein said linker has two or more identical second functional groups.

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91. (New) A biodegradable resin composition comprising

a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 47.

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92. (New) The biodegradable resin composition according to Claim 91, wherein said linker has two or more identical second functional groups.

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93. (New) A biodegradable resin composition comprising

a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

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94. (New) The biodegradable resin composition according to Claim 93, wherein said linker has two or more identical second functional groups.

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95. (New) A biodegradable resin composition comprising  
a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

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96. (New) The biodegradable resin composition according to Claim 95, wherein said linker has two or more identical second functional groups.

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97. (New) A biodegradable resin composition comprising

a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating,

wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

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98. (New). The biodegradable resin composition according to Claim 55, wherein said linker has two or more identical second functional groups.

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99. (New) A biodegradable resin composition comprising  
a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.

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100. (New) The biodegradable resin composition according to Claim 99, wherein said linker has two or more identical second functional groups.

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101. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 43.

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102. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 47.

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103. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 48.

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104. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 49.

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105. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 50.

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106. (New) A biodegradable molded body comprising the biodegradable resin according to Claim 71.

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107. A biodegradable molded body comprising the biodegradable resin composition according to Claim 77.

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108. (New) A biodegradable molded body comprising the biodegradable resin composition according to Claim 79.

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109. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 81.

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110. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 83.

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111. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 85.

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112. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 87.

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113. A biodegradable molded body comprising the biodegradable resin  
composition according to Claim 89.

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114. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 91.

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115. (New) A biodegradable molded body comprising the  
biodegradable resin composition according to Claim 93.

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116. (New) A biodegradable molded body comprising the biodegradable resin composition according to Claim 95

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117. (New) A biodegradable molded body comprising the biodegradable resin composition according to Claim 97.

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118. (New) A biodegradable molded body comprising the biodegradable resin composition according to Claim 99.

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119. (New) A method of producing the biodegradable resin according to Claim 43,

comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

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120. (New) A method of producing the biodegradable resin according to Claim 47, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.



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121. (New) A method of producing the biodegradable resin according to Claim 48, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

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122. (New) A method of producing the biodegradable resin according to Claim 49, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

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123. (New) A method of producing the biodegradable resin according to Claim 50, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

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124. (New) A method of producing the biodegradable resin according to Claim 71, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

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125. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

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126. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 5.

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127. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first

functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

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128. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

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129. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

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130. (New) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a

thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.